

*Lewisia rediviva*

Bitterroot

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The Corps of Discovery left the Pacific coast in the spring of 1806 for their journey home. By late June they were crossing the Rocky Mountains at Lolo Pass in deep snow, attempting to retrace their earlier route. In late evening on the last day in June they reached Traveler's Rest, where they had camped on the westbound journey, in the vicinity of present-day Lolo, Montana, near the confluence of Lolo Creek and the Bitterroot River. During the descent Lewis and his horse had fallen 40 feet down a steep slope. He was miraculously unhurt and on July 1 or 2 he collected several floral specimens, among them six bitterroot plants, which are preserved in the Lewis & Clark Herbarium in Philadelphia. The original annotation on the specimen sheet made by the botanist Frederick Pursh says, "The Indians eat the root of this. Near Clark's R. Jul. 1<sup>st</sup> 1806 The Calyx consists of 6 or 7. Leaves the Corolla many petals STamina many. [Phyl. 9.?] Capsula."

Indeed, the Indians ate a great deal of bitterroot. With blue camas (*Camassia quamash*) and cous bisquit-root (*Lomatium cous*), it constituted a major staple and trade commodity. A bag of bitterroot could be traded for a horse, and the noise of women pounding bisquit-root reminded Clark of "a nail factory." The Flathead and neighboring tribes assembled every spring in the Bitterroot Valley to harvest the plants. May was known as "bitterroot month," a time before flowering when the roots had maximal starch content, and a woman with a sharp stick could dig a pound in three days. As its name implies, for some the taste was unsavory. Lewis found them "naucious to my palate," and Montana pioneer Granville Stuart said he "could never eat it unless very hungry," though he added, "many of the mountaineers are very fond of it."

Upon his return to Philadelphia in April 1807, Lewis consigned his plants to Frederick Pursh, a German botanist. Pursh provides a detailed description of the species in Latin. In addition to the preserved specimens, he also had access to live material, grown from the still living roots, taken from one of Lewis's specimens and raised by Bernard M'Mahon in Philadelphia. Unfortunately, Pursh reports, "...some accident happening to it, I had not the pleasure of seeing it in flower." Pursh, realizing it represented a new genus, gave bitterroot its scientific name, *Lewisia rediviva*, deriving the species name from the Latin "renovated, or restored to life," and naming the genus after Meriwether Lewis. Our Montana specimens are considered the type collection for the genus *Lewisia*. In his book, *Flora Americae Septentrionalis*, published in 1814, Pursh says, "this elegant plant would be a very desirable addition to the ornamental perennials, since, if once introduced, it would be easily kept and propagated..." Pursh was right about that and bitterroot is a beautiful addition to native gardens, rock gardens and dry land native landscapes. It is easy to grow from seed and requires little care once it is firmly established.

Bitterroot is a cool-season, perennial forb in the purslane family (Portulacaceae). It seldom reaches more than two inches in height but has a thick, often branching taproot

that can be over 12 inches long. Bitterroot has a short caudex with densely clustered, succulent leaves, one to two inches long, at the caudex crown. The plants appear in the spring on dry grasslands and sagebrush slopes as dense, green rosettes of fleshy leaves (a characteristic of the purslane family) that dwindle as buds appear, and are dried up and gone when the flowers open. The blooms are unmistakable and appear as bright spots of color on the typically dry and rocky soil. Opening only under direct sunlight, they vary from pale to intense pink, but are occasionally white. The flowers remain open for only two to three days and are pollinated by insects, usually native bees. The fruit is a capsule with small, round seeds that are dispersed by wind and gravity. Germination rates are highest after cold stratification, so it is a good idea to plant seeds in the fall. Mat-forming plants, like *Eriogonum* spp., may serve as nurse plants and shelter bitterroot seeds and young plants. Bitterroot is usually dormant during summer and early fall, but in western Montana fall dormancy is broken by the start of rains and leaves may appear in late October.

Bitterroot is most common in intermontane grassland communities, but is also found in open areas of various western shrub, woodland, and forest communities. Dry, exposed ridges with gravelly or rocky soils are common sites in which to find bitterroot, but it also grows on river bars, plains and rocky slopes. Alberta and British Columbia in Canada are the northern extent of the plant's range and it is rare in Arizona and Colorado. Montana and Wyoming comprise the easternmost extent of its distribution. Bitterroot is found in dry western climates where most of the precipitation occurs in fall and winter, and the soils dry out in summer. It is found from 2,500 feet elevation in California to over 10,000 feet elevation in Utah. Bitterroot is especially abundant in western Montana and is the source of geographical names such as the Bitterroot River, the Bitterroot Valley and the Bitterroot Mountains.

In the late nineteenth century the Women's Christian Temperance Union (WCTU) gained momentum, and increased its presence by advocating the concept of state designated emblematic flowers. This might have amused Pursh, who died early of such serious alcoholism he was once "kept under lock and key with carefully restricted fluid stimulation, and allowed an hour's walk a day, under guard, to insure his return to his labors." In 1889 delegates to the Montana Chapter of the WCTU chose "a little blue flower that grows near the snow banks" as their initial offering. Later, more organized methods were applied, and the Montana Floral Emblem Association was formed. Members then voted, and bitterroot was the clear winner with 3,621 supporters. Evening primrose was a distant second, followed by wild rose, white clematis, prickly pear cactus, goldenrod, and mariposa lily. The legislature, without a dissenting vote, made the bitterroot our state flower in 1895.

Because of its small size bitterroot is not considered an important forage plant for large herbivores, but rodents eat the leaves and seeds.

Bitterroot can probably survive wildfires that occur in the summer and early fall because the plant is dormant during these periods, but prescribed burning or other fires during the spring when bitterroot is actively growing may be harmful because the carbohydrates

stored in the roots are used to initiate spring growth and if the leaves are burned the plant may not have enough reserves to survive.

Bitterroot has a unique place in our historical and cultural history. Not only is it our state flower, but flowers from Montana were used to first describe a new genus for western science. It is an important plant for Montana's native people and remains a source of cultural tradition. Bitterroot's native habitats are succumbing to urban sprawl and development and remaining populations should be treated with care.